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JOHN DARGLE, JR., DIRECTOR OF PARKS, RECREATION AND CULTURE

Date: January 5, 2017

To: Jason Haas, Chair, Parks, Energy and Environment Committee,
Supervisor District 14

From: John Dargle, Jr., CPRP, Director, Department of Parks,
Recreation and Culture (DPRC)

Subject: Lake Park Ravine Bridge Update (INFORMATION)

ISSUE

An update on the alternatives considered for repair or replacement (“Permanent Alternative”) and factors that will influence the temporary status of the bridge (“Temporary Status”), i.e. closed, wire meshed or removed.

BACKGROUND

Across Ravine Road in Lake Park there is an arch bridge that connects the two bluffs adjacent to Ravine Road (“Ravine Bridge”). Ravine Bridge was constructed in 1906 when Lake Park was owned by the City of Milwaukee. In the 1930s Lake Park was transferred to Milwaukee County. In 2015, capital funding in the amount of \$400,000 was allotted to Lake Park Ravine Bridge (WP484). An in-depth inspection (“2015 Report” attached) was completed in 2015 that indicated the bridge could support 30 pounds per square foot (30 PSF). The 2015 report also indicated that if the County wanted to keep a bridge in this location it would need to either repair or replace. In a 2016 follow up correspondence (“2016 Correspondence” attached), engineers indicated that if the County could not control crowds on the bridge, the bridge should be closed. In April, 2016 an operational decision was made to restrict event permits that utilized the bridge (e.g. bike races). In October, 2016 this decision was reassessed and an operational decision was made to close the bridge out of an abundance of caution.

A. Preferred Permanent Alternative

An in-depth bridge inspection of the 110-year old Lake Park Ravine Bridge was conducted by engineering consultants GRAEF in the spring of 2015. Findings outlined within the inspection report indicated several local structural failures at the abutments, concrete deterioration, earlier rehabilitation efforts, and several elements that do not have the capacity to resist current code prescribed loads. The report offered several alternatives to address the aging bridge, including replacement-in-kind, replacement with a new bridge of a different style, and rehabilitation with selective element replacements.



In the spring of 2016 a Request for Proposals was issued for a Phase I Planning and Schematic Design effort to evaluate three alternative bridge replacement concepts and associated cost estimates. Five proposals were received. GRAEF was selected by Milwaukee County to lead General Requirements of work to include historical coordination, work group coordination and public involvement meetings, schematic plan development, and grant funding research. The ultimate goal of Phase 1 was for selection of a bridge design alternative which would be respectful of and be compatible with the historic nature of the Fredrick Law Olmsted designed Lake Park.

1. *Work Group Activities*

To obtain a wide range of opinions from stakeholders, a Work Group was created to assist with the alternative selection process. This 20 member group consisted of Milwaukee County staff from the County Board, Parks, and Administrative Services, engineering consultants GRAEF and Malas Engineering, UW-Milwaukee School of Architecture and Urban Planning, historical consultant Heritage Research, City of Milwaukee Historic Preservation Commission, Milwaukee County Historical Society, the State Historical Preservation Commission, Lake Park Friends, Preserve Our Parks, Historic Water Tower Neighborhood, and North Point Lighthouse Friends.

The Work Group held a total of five meetings with the goals to provide input on the study's approach, review and comment upon design criteria, discuss historical preservation ramifications, provide final comments upon the developed alternatives, and select a final preferred single alternative for recommendation to Milwaukee County.

Based upon direction from the Work Group, the Phase I scope was expanded for inclusion of a 15-25 year life structure rehabilitation as an alternate for obtaining cost estimates. In addition, the Work Group recommended obtaining an independent engineering consultant (O.N.E. Group) to visit the bridge and provide a report for recommendations for a 40-50 year life structure rehabilitation.

2. *Alternatives*

Five alternates were ultimately selected for consideration:

- Alternate 1 – Restore the existing with a traditional 15-20 year rehabilitation
- Alternate 2 – Restore the existing with an extended 40-50 year rehabilitation
- Alternate 3 – Replace-in-kind
- Alternate 4 – Replace with precast bridge w/ precast façade panels
- Alternate 5 – Replace with modern arch

3. *Cost Estimates*

Cost estimates were determined in two parts. The first part was based upon the estimated "first cost" to perform the initial construction. A professional construction cost estimator, Middleton Construction Consulting, provided these estimates based upon the original 1906 design drawings, images and renderings provided

by the UW-Milwaukee team, rehabilitation quantity estimates from the in-depth inspection report, and the O.N.E. Group long term rehabilitation report.

The second part of the cost estimates was based upon a 100-year life cycle cost. Because “first costs” unfairly favor the lowest cost option without consideration of future maintenance and replacement, a life cycle cost was used to provide an engineering economics analysis to compare “apples to apples”. Using the “first cost” as a basis, the life cycle cost analysis considered future inspection efforts and future bridge replacement costs. Life cycle costs were determined as a present worth value and as an annuity. The following table summarizes the cost estimate analysis:

Alternate #	First Cost	Life Cycle Present Worth	Life Cycle Annuity
Alternate 1	\$1.75M	\$2.80M	\$101,000
Alternate 2	\$2.27M	\$2.69M	\$97,300
Alternate 3	\$2.31M	\$2.45M	\$88,700
Alternate 4	\$1.75M	\$1.86M	\$67,300
Alternate 5	\$1.93M	\$2.05M	\$74,100

4. *Funding Opportunities*

Several sources of grants were investigated that could potentially be applied to either bridge rehabilitation or replacement. They included the following:

- Knowles-Nelson Stewardship Grant Program
- Federal Recreational Trails Act Program
- WisDOT Transportation Alternatives Program (TAP)
- WisDOT FAST Program
- Wisconsin Coastal Management Program
- PeopleForBikes Community Grant Program

Of these, the TAP program seemed to be the most promising and was investigated further. The TAP program targets non-motorized modes of transportation and funds up to 80% of eligible project costs, and either bridge rehabilitation or replacement would qualify. Milwaukee County would need to designate the bridge as part of their bicycle transportation system (Oak Leaf Trail). Other funding sources either did not offer a significant amount of resources to warrant pursuing, or the details of the Lake Park Ravine Bridge project simply did not qualify.

TAP funding is a very competitive program as the intent is to provide funding for a broad array of projects. Because this is a large dollar project relative to others, it will need to demonstrate statewide significance. Of the 98 TAP grant applications submitted for the January 2016 competition, roughly 33 projects will be funded. SEWRPC noted that in 2016, approximately \$1.5M of funding was available for \$10M of competing projects. Discussion with SEWRPC suggest that neither

bridge rehabilitation nor replacement would have an advantage since neither option expands a trail. Competitiveness would be improved if total project cost was less than \$1.0M, or if the project could be broken down into phases.

5. Public Involvement

Two public involvement meetings were held to inform the community of the study, present alternatives, and receive feedback. The first meeting was held May 17th at UW-Milwaukee School of Architecture and Urban Planning. Bridge condition was presented to demonstrate a need for rehabilitation or replacement, and an architectural approach described to show how replacement alternatives would be developed.

The second meeting was held on July 19th at the Marcia Coles Room at the Lake Park Bistro. A review of bridge inspection findings, Work Group activities, and cost estimates were presented. Several architectural renderings and drawings were shown to achieve feedback in conjunction with the costs and bridge historical significance. Two straw polls were taken. The first considered attendee preference of the 5 alternates – alternates 2 and 3 received the majority of the votes. The second straw poll asked attendees for preference of alternates 2 and 3 only, with results favoring alternate 3, replace-in-kind.

6. Final Decision Process

A work group meeting was held August 23rd to discuss results of the second Public Information meeting and to determine a preferred alternative. Representatives from the State Historic Preservation Office were there to offer their guidance, including Mark Buechel who attended in person and Chip Brown who attended via phone. A decision matrix was presented for review as a tool in helping to guide selection process. The matrix was used to help collectively balance objective considerations (costs, straw poll results, etc.) against subjective considerations (respect of the park, aesthetics, etc.) in a manner that is fair to all alternates. As there was no clear consensus for a final decision, Supervisor Wasserman explained that in order to debate for funding of this project, unity amongst the Work Group was needed and he recommended that the Friends Group hold a joint meeting to come up with consensus for a single alternate.

The joint Friends Groups meeting was held on September 2nd and the final Work Group meeting was held on September 8th. The goal of this final meeting was for selecting a preferred alternate. After discussion from each of the Friends Groups as to justification for their positions, a show of hands vote was taken by the Work Group members. All members voted in favor of Alternate #3, Replace-In-Kind, as the preferred alternate with the exception of two who abstained.

7. Preferred Permanent Alternative

The primary reason for choosing Alternate #3 over Alternate #2 was that Alternate #2 would require a separate steel infrastructure to be built below the existing bridge, changing the appearance of the bridge. In other words, Alternate #3 will look more like the original than repairing the original. Detailed information

of this study (meeting minutes, presentations, historic information, etc.) can be found at the following FTP site:

All-in-one Link: [FTP://E-20160416-HDJ8:6Weqeucu7@FTP.GRAEF-USA.COM](ftp://E-20160416-HDJ8:6Weqeucu7@FTP.GRAEF-USA.COM)
Username: E-20160416-HDJ8
Password: 6Weqeucu7
FTP Site: [FTP://FTP.GRAEF-USA.COM](ftp://FTP.GRAEF-USA.COM)
Expiration: 06/30/2017 13:07:52

To access the site, either click on the All-in-one Link above, or copy it into your Windows Explorer address bar.

B. Developing a Preferred Temporary Status

1. Closure of the Ravine Bridge and Drive.

Attached is the inspection report prepared by the independent engineering consultants at Graef dated July 2015 (2015 Report). As the report indicates on page 48, the Spandrel of the Deck is 30 pounds per square foot (PSF), meaning the bridge may not be able to handle more than 30 PSF. The recent inquiry related to the alternatives for repair and replace revealed that several people have been using the drive for pedestrian and bicycle access, despite the road closure. In consulting with various consultants on a way to better restrict the drive, we revisited this 2015 report and a related follow up of April 2016 (attached). Although 30 PSF is acceptable for “normal” activity, it is not acceptable for even slightly heavier pedestrian traffic of a light crowd.

After consulting with our engineers, the calculation of how many people the bridge can support is as follows. The bridge is approximately 118 feet long and 10 feet wide for a total of 1,180 square feet. The bridge can support 30 PSF. 1,180 square feet times 30 pounds PSF is 35,400 pounds. This weight could only be supported if the weight was evenly distributed across the bridge. The average American male adult is 195.5 pounds. 35,400 pounds divided by 195.5 pounds per adult equals 181 adults.

Because (a) the County cannot operationally control the volume of pedestrian crowd traffic on the bridge, (b) signs have not been effective in similar circumstances in neighboring communities, and (c) out of an abundance of caution, the bridge will be closed until a replacement or repair alternative is finalized. Increased barriers have been placed on the drive to physically restrict pedestrian, vehicle and bicycle access until bridge is repaired or removed. These are in addition to the precautions initially taken in 2015 when the report was first received, which included concrete barriers to prevent vehicles across bridge and not allowing the permitting of events across the bridge.

2. Alternative Limitations

To understand next steps, it is important to understand the alternatives and the limitations placed on those alternatives. The primary limitations are (a) the approved County Budget Language (“Budget”), (b) whether the County’s contribution is Bonding or Cash (“Bonding vs. Cash”), and (c) the commitment from partner organizations to raise additional funds.

a. *Budget*

The relevant portion of the Adopted 2017 Budget is attached and includes capital project WP48401 indicating that the Lake Park Ravine bridge “construction phase of this sub-project shall not proceed until the \$2,000,000 in private contributions is secured and committed.” The County committed \$500,000 towards an expected \$2.5 million budget, with the remaining \$2,000,000 to be raised by private contributions. A Memorandum of Understanding is being prepared for circulation to Friends Groups connected to this project.

The alternative supported by the Work Group requires a two-step process: (1) demolition, and (2) rebuild in-kind. This is relevant because there are two limitations to proceeding with step 1. The first is the budget language restricting “construction phase” listed above. The comptroller and bond counsel have indicated that this “construction phase” includes starting demolition. Consequently this budget language would have to change. However, even if the budget language were to change, we could not proceed with step 1 unless it is cash financed because of bonding limitations as listed below.

b. *Bonding*

The current funding of the Ravine Bridge is bond funding. Bond Counsel has indicated that paying for demolition in bond financing necessitates that replacement construction begins in a “reasonable time frame” which is generally understood to mean two years. Given the uncertainty of private contributions to raise \$2,000,000, the two year timeframe is unknown. Consequently, in order to proceed with step 1, cash would need to be obligated from Debt Service Reserve, or build a reserve by other means.

c. *MOU*

A Memorandum of Understanding is being drafted to be circulated to Friends Groups and partner organizations who may have an interest in raising the additional funds.

NEXT STEPS

Next steps would be to commit to the Permanent Alternative, draft an MOU with community organizations to raise additional funds in accordance with the Adopted 2017 Budget Capital Project WP48401, review the preferred Temporary Status with community groups, and submit a recommendation to the County Board.

A. Decision on Preferred Permanent Alternative

Through a community planning process, the workgroup preferred Alternative #3, which is “Replace-in-kind” with an estimated budget of approximately \$2.31 million. This is consistent with the 2017 adopted budget language of “repair or replacement.” At this point, the administration is prepared to move forward with this alternative once the \$2,000,000 is raised by private contributions. If the Board prefers a repair alternative over a replacement alternative, it would have to amend the budget

language. If no amendment is made, design work would begin upon entering into a MOU with one or more partner organizations.

B. Decision on Temporary Status

Not knowing how long it will take for private contributions to raise the requisite funds, the County still needs to take immediate action to make sure the area is safe and secure. There are essentially three options: (1) continue temporary barricades (“Barricade Option”), (2) install steel mesh, similar to the Domes that would hold material from falling to the drive below (“Mesh Option”), or (3) remove bridge in preparation of replacement (“Remove Option”). The Mesh Option and Remove Option would allow Ravine Drive to be reopened, but not the bridge itself.

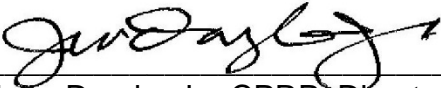
The Directors of DPRC and DAS will be meeting with partner organizations regarding both the MOU on the Permanent Alternative and feedback on a preferred Temporary Status. Once that feedback is obtained, a recommendation will be made to the County Board.

RECOMMENDATION

No action requested. Informational item unless further action required.

Prepared by: John Dargle, DPRC Director and Teig Whaley-Smith, DAS Director

Approved by:



John Dargle, Jr., CPRP, Director DPRC

Attachments:

- Attachment 1 – A1 2015 Lake Park Over Ravine Road Inspection Report
- Attachment 2 – 2016 Correspondence
- Attachment 3 – 2017 Lake Park Ravine Bridge Capital Budget
- Attachment 4 – Lake Park Ravine Bridge Update

Copy:

- Chris Abele, County Executive
- Raisa Koltun, Chief of Staff, County Executive’s Office
- Theodore Lipscomb, Sr., Chairman, County Board of Supervisors
- Kelly Bablitch, Chief of Staff, County Board of Supervisors
- Marcelia Nicholson, Vice-Chair, Parks, Energy & Environment Committee
- Sheldon Wasserman, Supervisor District 3